<110>   LI, Guofu
        LIU, Qiang
        JAMIESON, Andrew
        REBAR, Edward

<120>   COMPOSITIONS AND METHODS FOR REGULATION OF PLANT GAMMA-TOCOPHEROL
        METHYLTRANSFERASE

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<150>   60/406,849
<151>   2002-08-29

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<223>   Xaa may be present or absent

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<220>
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<223>   Xaa = any amino acid except His

<220>
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<400>   18

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1                   5                   10                  15
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Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
            20   25   30

Xaa Xaa

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<400> 19

Thr Gly Glu Lys Pro
1   5

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<213> Artificial

<220>
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<400> 20

Gly Gly Gly Gly Ser
1   5

<210> 21
<211> 8
<212> PRT
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<220>
<223> linker

<400> 21

Gly Gly Arg Arg Gly Gly Gly Ser
1   5

<210> 22
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<220>
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<400> 22

Leu Arg Gln Arg Asp Gly Glu Arg Pro
1   5

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<212> PRT
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<220>
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<400> 23

Leu Arg Gln Lys Asp Gly Gly Gly Ser Glu Arg Pro
1   5   10

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<211> 16
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<213> Artificial

<220>
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<400> 24

Leu Arg Gln Lys Asp Gly Gly Gly Ser Gly Gly Gly Ser Glu Arg Pro
1   5   10   15

<210> 25
<211> 28
<212> PRT
<213> Artificial

<220>
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<400> 25

Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Xaa Xaa Xaa Xaa Xaa
1   5   10   15

Xaa Xaa His Gln Arg Thr His Thr Gly Glu Lys Pro
            20   25

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<211> 34
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<220>
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<222> (18)..(24)
<223> Xaa can be any naturally occurring amino acid

<400> 26

Lys Lys Lys Ser Lys Gly His Glu Cys Pro Ile Cys Phe Arg Val Phe
1   5   10   15

Lys Xaa Xaa Xaa Xaa Xaa Xaa Xaa His Lys Arg Ser His Thr Gly Glu
            20   25   30

Lys Pro

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<400> 27

Tyr Lys Cys Thr Val Cys Gly Lys Ser Phe Ser Xaa Xaa Xaa Xaa Xaa
1   5   10   15

Xaa Xaa His Lys Arg Leu His Thr Gly Glu Lys Pro
            20   25

<210> 28
<211> 23
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<220>
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<400> 28

Phe Ser Cys Asn Tyr Cys Gln Arg Lys Phe Tyr Xaa Xaa Xaa Xaa Xaa
1   5   10   15

Xaa Xaa His Val Arg Ile His
            20

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<212> PRT
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<223> C-terminal sequence to the third finger of SP-1

<400> 29

Gln Asn Lys Lys
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<220>
<223> helix capping sequence

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<223> Xaa = Lys or Arg

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<223> Xaa = Lys or Pro

<400> 30

Thr Gly Glu Xaa Xaa

<210> 31
<211> 32
<212> PRT
<213> Artificial

<220>
<223> zinc finger backbone

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<222> (16)..(22)
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<400> 31

Lys Ser Lys Gly His Glu Cys Pro Ile Cys Phe Arg Val Phe Lys Xaa
1   5   10   15

Xaa Xaa Xaa Xaa Xaa Xaa His Lys Arg Ser His Thr Gly Glu Lys Pro
            20   25   30

<210> 32
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Tyr Lys Cys Thr Val Cys Gly Lys Ser Phe Ser Xaa Xaa Xaa Xaa Xaa
1   5   10   15

Xaa Xaa His Lys Arg Leu His Thr Gly Glu Lys Pro
            20   25

<210> 33
<211> 27
<212> PRT
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<400> 33

Phe Ser Cys Asn Tyr Cys Gln Arg Lys Phe Gly Xaa Xaa Xaa Xaa Xaa
1   5   10   15

Xaa Xaa His Val Arg Ile His Gln Asn Lys Lys
            20   25

<210> 34
<211> 60
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<220>
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<220>
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<222> (25)..(45)
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ctcaccggtg tgagaacgct tgtgnnnnnn nnnnnnnnnn nnnnncttga aaacacggaa   60

<210> 35
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<212> DNA
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<220>
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<220>
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<400> 35
ttcaccagta tgaagacgct tatgnnnnnn nnnnnnnnnn nnnnnagaaa aagacttacc   60

<210> 36
<211> 63
<212> DNA
<213> Artificial

<220>
<223> H3

<220>
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<222> (28)..(48)
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cttcttgttc tggtggatac gcacgtgnnn nnnnnnnnnn nnnnnnnnac cgaacttacg   60

ctg   63

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<220>
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<400> 37
aagtctaagg gtcacgagtg cccaatctgc ttccgtgttt tcaa   44

<210> 38
<211> 54
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<400> 38
tctcacaccg gtgagaagcc atacaagtgc actgtttgtg gtaagtcttt ttct   54

<210> 39
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<400> 39
cttcatactg gtgaaaagcc attctcttgc aactactgcc agcgtaagtt cggt   54

<210> 40
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<400>   41

Arg Ser Asp Asn Leu Ala Arg
1                   5


<210>   42
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<400>   42

Asp Arg Ser Asn Leu Thr Arg
1                   5


<210>   43
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<212>   PRT
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<220>
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<400>   43

Arg Ser Asp Ala Leu Thr Arg
1                   5


<210>   44
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<210>  45
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<400>  45

Arg Ser Asp His Leu Ala Arg
1               5


<210>  46
<211>  7
<212>  PRT
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<220>
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<400>  46

Thr Ser Gly Asn Leu Val Arg
1               5


<210>  47
<211>  7
<212>  PRT
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<220>
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<400>  47

Arg Ser Asp His Leu Thr Glu
1               5


<210>  48
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<220>
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<400>  48
tggtgggtgt                                                          10


<210>  49
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<400>    49

Arg Ser Asp Ala Leu Thr Arg
1                   5


<210>    50
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<400>    50

Arg Ser Asp His Leu Thr Thr
1                   5


<210>    51
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<220>
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<400>    51

Arg Ser Asp His Leu Thr Thr
1                   5


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<220>
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gaagaggatt                                                    10


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<220>
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<400> 53

Gln Ser Ser Asn Leu Ala Arg
1   5

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Arg Ser Asp Asn Leu Ala Arg
1   5

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1   5

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31

<400> 57

Arg Ser Asp His Leu Ala Arg
1   5

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<400> 58

Gln Ser Gly Asn Leu Ala Arg
1   5

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Arg Ser Asp Asn Leu Thr Arg
1   5

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Glu Arg Gly Thr Leu Ala Arg
1   5

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<400> 62

Gln Ser Gly Ser Leu Thr Arg
1   5

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<400> 63

Arg Ser Asp His Leu Thr Thr
1   5

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Arg Ser Asp His Leu Thr Gln
1   5

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Gln Ser Gly Asn Leu Ala Arg
1                   5


<210>   67
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<400>   67

Arg Ser Asp His Leu Ser Arg
1                   5


<210>   68
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<400>   69

Gln Ser Ser His Leu Ala Arg
1                   5


<210>   70
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1               5


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<400>    71

Gln Ser Gly Asn Leu Ala Arg
1               5


<210>    72
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gaggaggatg                                                    10


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<400>    73

Gln Ser Ser Asn Leu Gln Arg
1               5


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1   5

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<400> 75

Arg Ser Asp Asn Leu Gln Arg
1   5

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Arg Ser Asp Asn Ala Leu Arg
1   5

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Arg Ser Asp Asn Leu Ala Arg
1   5

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1   5

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Gln Ser Ser Asp Leu Arg Arg
1   5

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Arg Ser Asp Glu Leu Gln Arg

<210> 83
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<400> 83

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1   5

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1   5

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Gln Ser Gly His Leu Gln Arg
1   5

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1               5


<210>  88
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<220>
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Gln Ser Ser Asp Leu Arg Arg
1               5


<210>  90
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<400>  90

Gln Ser Gly Asn Leu Ala Arg
1               5


<210>  91
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<223> ZFP13 F3

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<210> 92
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Asp Arg Ser His Leu Thr Arg
1   5

<210> 94
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<400> 94

Thr Ser Gly His Leu Thr Thr
1   5

<210> 95
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<223> ZFP14 F3

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1   5

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1   5

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Arg Ser Asp Ala Leu Ser Arg
1   5

<210> 99
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1   5

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Arg Ser Asp His Leu Thr Thr
1   5

<210> 103
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Arg Ser Asp Ala Leu Thr Arg
1   5

42

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tcactcgctc ataaggcttc cttccaagt   29

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tgcaacaaac cccgacttat g   21

<210> 108
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cccgcgtcga cctttttatc   19

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aataaatgcg tccctt   16

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<220>
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Gln Ser Ser His Leu Ala Arg
1   5

<210> 111
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<400> 111

Gln Ser Ser Asp Leu Thr Arg
1   5

<210> 112
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Thr Ser Gly Asn Leu Thr Arg
1   5

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1   5

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Gln Ser Gly Asn Leu Ala Arg
1   5

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<400> 115

Arg Ser Asp Asn Leu Thr Arg
1   5

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Arg Ser Asp Asn Leu Ala Arg
1   5

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Gln Ser Gly Asn Leu Ala Arg
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<400> 118

Gln Ser Gly Asn Leu Ala Arg
1   5

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<400> 119

Gln Ser Gly His Leu Ala Arg
1   5

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Thr Ser Gly Ala Leu Thr Arg
1   5

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Arg Ser Asp Asn Leu Thr Arg
1   5

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1   5

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<212> PRT
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<220>
<223> ZFP C7 F2

<400> 123

Thr Ser Gly Asn Leu Thr Arg
1   5

<210> 124
<211> 7
<212> PRT
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<220>
<223> ZFP C7 F3

<400> 124

Thr Ser Gly Asn Leu Thr Arg
1   5

<210> 125
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<220>
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<400>  125

Arg Ser Ser Asn Leu Ala Arg
1               5


<210>  126
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<212>  PRT
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<220>
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<400>  126

Gln Ser Gly His Leu Gln Arg
1               5


<210>  127
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